A Guide to the
Factories & Industrial Undertakings (Woodworking Machinery) Regulations
This guidebook is prepared by the
Occupational Safety and Health Branch
Labour Department

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1. Introduction

There is a high risk of accident from the use of woodworking machinery. In spite of improved safeguards, many people using these machines are injured each year.

The facts show that injuries from these accidents are invariably more serious than those caused by ordinary machinery and a great many of the victims suffer from permanent incapacity.

The Factories and Industrial Undertakings (Woodworking Machinery) Regulations (the Regulations) lay down standards of safety measures for woodworking machinery and impose duties on proprietors to protect persons operating the machinery. At the same time, the Regulations also place a legal obligation on persons employed to use the guards and safety devices provided.

This guide should be read in conjunction with ‘A Guide to the Factories and Industrial Undertakings Ordinance (Sections 6A and 6B) - Know your General Duties’ and other relevant publications published by the Labour Department. The sections impose general duties on proprietors and persons employed with regard to the safety and health at work in industrial undertakings.

2. Regulations

2.1 Application

The Regulations apply to any industrial undertaking in which any woodworking machine is used.

2.2 Interpretation

"Circular saw" (圓鋸) means a circular saw working in a bench (including a rack bench) for the purpose of ripping, deep-cutting or crosscutting; but does not include a swing saw or other saw which is moved towards the wood.

"Plain band saw" (普通帶鋸) means a band saw, other than a log saw or a band re-sawing machine, the cutting portion of which runs in a vertical direction.
"Planing machine" (刨床) includes a machine for overhand planing or for thicknessing or for both operations.

"Swing saw" (搖擺鋸) or "Pendulum saw" (鐘擺鋸) means a revolving saw mounted in a frame, column or chassis which is suspended from a pivot above the table, bench or other support on which the wood is placed and which is operated by being pulled across the table, bench or other support on which the wood is placed.

"Underground room" (地下室) means a room any part of which is so situated that half or more of the whole height thereof measured from the floor to the ceiling is below the surface of the footway of the adjoining street or of the ground adjoining or nearest to the room.

"Woodworking machine" (木工機器) means any circular saw, swing saw, pendulum saw, plain band saw, planing machine, vertical spindle moulding machine or chain mortising machine that operates on wood.

2.3 Duties of Proprietors

2.3.1 Stopping and starting devices
A woodworking machine shall be provided with efficient stopping and starting appliance which shall be readily and conveniently operated.

2.3.2 Clear space
Sufficient clear and unobstructed space shall be maintained while a woodworking machine is in motion.

2.3.3 Floors
The floor surrounding a woodworking machine shall be maintained in good and level condition, and, so far as practicable, free from chips and other loose materials.

2.3.4 Lighting
Adequate lighting, being not less than 160 lux of light of working area, shall be provided for the working area. Artificial lighting shall be so placed or shaded as to prevent direct rays of light from impinging on the eyes of the operator while operating the machine.
2.3.5 Underground rooms
Woodworking machine is not allowed to be worked in any underground room which is certified by the Commissioner for Labour to be unsuitable.

2.3.6 Training

1. A person while being trained to work a woodworking machine shall be fully and carefully instructed as to the dangers and the precautions to be observed.

2. Person under 16 years of age is not allowed to be employed on any woodworking machine.

2.3.7 Safeguarding of Circular Saws

1. Under bench plate
   The part of a circular saw below the bench table shall be protected by 2 plates of metal or other suitable materials, one on each side of the saw and such plates shall not be more than 150 millimetres apart, and the bottom side shall be at least 50 millimetres beyond the saw teeth. The metal plate shall be of a thickness not less than 2 millimetres if not beaded or not less than 1 millimetre if beaded.

2. Riving knife
   There shall be a riving knife behind and in direct line with a circular saw. The riving knife shall -
   (a) have a smooth surface;
   (b) be strong, rigid and easily adjustable;
   (c) be so positioned that its edge nearer the saw shall form an arc of a circle having a radius not exceeding the radius of the largest saw used on the bench;
   (d) be maintained as close as practicable to the saw and be so positioned that the distance between its front edge and the teeth of the saw does not exceed 15 millimetres;
   (e) for a circular saw of a diameter of less than 600 millimetres, extend upwards from the bench table
to within 25 millimetres of the top of the saw;
(f) for a circular saw of a diameter of 600 millimetres or more, extend upwards from the bench table to a height of not less than 250 millimetres.

3. **Top Guard**

The top of a circular saw shall be covered by a strong and easily adjustable guard, with a flange at the side of the saw furthest from the fence; and such guard shall -
(a) be kept so adjusted that the flange shall extend below the roots of the teeth of the saw;
(b) extend from the top of the riving knife to a point as low as practicable at the cutting edge of the saw.

4. **Push-sticks**

A suitable push-stick shall be kept available for use at the bench.

5. **Saw blade**

Cracked saw is not allowed to be used in a circular saw.

**2.3.8 Safeguarding of Swing / Pendulum Saws**

1. **Saw guard**

A swing / pendulum saw shall be guarded so far as practicable. It shall also be so designed and maintained that it automatically returns to the back position when released at any point of its travel.

2. **Limit chain**

A swing / pendulum saw shall be provided with properly maintained limit chains or other effective devices to prevent it from being pulled out in front of the work table.
2.3.9 Safeguarding of Plain Band Saws

1. Both sides of the bottom pulley of a plain band saw shall be completely encased by sheet metal or other suitable material; 13(a)

2. The front of the top pulley of a plain band saw shall be covered with sheet metal or other suitable material; 13(b)

3. All portion of the blade of a plain band saw shall be enclosed or securely guarded, except the portion of the blade between the bench table and the top guide. 13(c)

2.3.10 Safeguarding of Planing Machines

1. Planing machine, which is used for overhand planing and not mechanically fed, is only allowed to be fitted with cylindrical cutter block. 14(1)

2. A planing machine used for overhand planing shall be provided with an easily adjustable “bridge” guard capable of covering the full length and breadth of the cutting slot in the bench. 14(2)

3. The feed roller of a planing machine used for thicknessing, except a machine used both for overhand planing and thicknessing, shall be provided with an efficient guard. 14(3)

2.3.11 Safeguarding of Vertical Spindle Moulding Machines

1. The cutter of a vertical moulding machine shall, where practicable, be provided with the most efficient guard having regard to the work being performed. 15(1)

2. For such work as cannot be performed with an efficient guard for the cutter, the wood being moulded shall be held in a jig or holder. 15(2)
3. A suitable “spike” or push stick shall be kept available for use at the bench.

2.3.12 Safeguarding of Chain Mortising Machines

The chain of a chain mortising machine shall be provided with a guard that shall enclose the cutters so far as practicable.

2.3.13 Maintenance

1. All tools, blades and cutting instruments of a woodworking machine and other machines operating on wood shall be -
   (a) kept free from patent defect;
   (b) properly maintained;
   (c) kept clean;
   (d) properly ground, sharpened and set.

2. The guards and other appliances shall be -
   (a) maintained in an efficient state;
   (b) constantly kept in position while the machine is in motion;
   (c) so adjusted as to enable the work to be carried on without unnecessary risk

2.4 Duties of persons employed

A person employed on a woodworking machine shall -
   (a) use and maintain in proper adjustment the guards provided; and
   (b) use the “spikes” or push-sticks and jigs or holders provided.

2.5 Offences and penalties

(1) Proprietor who fails to discharge his duty is guilty of an offence and shall be liable on conviction to a fine of $50,000.

(2) Person employed who fails to discharge his duty is guilty of an offence and shall be liable on conviction to a fine of $10,000.
3. Exclusion of certain regulations

Regulations 10, 13, and 14(2) and (3) shall not apply to a woodworking machine when other safeguards are provided and maintained rendering the machine equally safe.

4. Safety in the use of Woodworking Machines

4.1 Circular Saw (See Figs. 1 and 2)

The following safety devices must be provided where a circular saw is used:

4.1.1 Adjustable top guard

This guard made of stiff metal is normally semi-circular in shape. It may be adjusted to various levels to suit the thickness of wood. Proper adjustment of the guard must be made before work is started so that the wood may just pass underneath it. In the event of the operator slipping, the guard will prevent his body from coming in contact with the saw teeth. Adjustment to the guard should only be made whilst the saw is at rest.

4.1.2 Riving knife

Most fatal accidents at circular saws have been due to the timber closing-in on the saw and being flung back or off with great violence. The riving knife is the means of preventing this. On fixing, it must be ensured that the distance between the knife and the saw teeth is no less than 3 millimetres and no more than 15 millimetres. The bolts or studs for securing the knife should be properly tightened or it may be pulled against the revolving saw and damaged.
4.1.3 Under bench plate
This plate is installed to prevent workers from being hurt by the saw when removing sawdust. The sheet metal used for guarding each side of the saw should not be more than 150 millimetres apart, and the bottom side should be at least 50 millimetres lower than the saw teeth.

4.1.4 Push-stick
Push-stick helps to prevent the worker’s hands from being too close to the saw. They are indispensable safety devices and have prevented many accidents.

A. Under bench plates (on each side of saw, not more than 150mm apart).
B. Riving knife (adjustable to suit saw)
C. Top guard (adjustable to suit work)
D. Flanged adjustable extension piece.

Fig. 1

Push Stick

Fig. 2
4.2 Swing / Pendulum Saw (See Fig. 3)

The following safety devices must be provided:

4.2.1 Saw guard
The saw must be covered as far as is practicable by a guard of stiff sheet metal to prevent the hand from coming in contact with the saw teeth. It should be so designed that it automatically returns to the back position when released at any point of its travel.

4.2.2 Limit chain
Accidents often arise from a swing saw being pulled out from the work table as a result of use of excessive force. The function of a limit chain is to fasten the saw on the machine rack, restraining the saw from swinging beyond the range of the work table. In view of the importance of the chain, regular examination and maintenance are indispensable safety measures.
4.3 Plain Band Saw (See Fig. 4)

The following safety measures must be taken:

4.3.1 The part of the machinery which is below the work table, including the rotating bottom pulley wheel and the saw should be completely encased by sheet metal to ensure that the worker does not come into contact with it. The top pulley above the work table must be properly covered with sheet metal. All portions of the blade should be securely guarded except the cutting portion of the blade between the work table and the (top) guide.

Fig. 4
4.4 Planing Machine

The risk from overhand planing machines and all planing machine is great, particularly on those equipped with the old-type square cutter blocks. These machines were responsible for the loss of many workers’ fingers or hands. The following safety precautions must be adopted.

4.4.1 Cutter block

Unless the machine is automatically fed, a circular cutter must be used instead of the more dangerous square cutter block.

4.4.2 Bridge guard

To give protection to the hands, a suitable guard must be set on the planing machines, to cover the cutter slot. Where the “bridge” guard is used, the position between the end of the guard and the fence should be so adjusted that there is just sufficient room for the passage of wood but not enough to allow fingers to come into contact with the cutter. (See Figs 5 and 6)
4.4.3 Push-block

When short pieces of wood are planed, push-blocks must be used or a special appliance must be employed to grip the wood tightly before planing. (See Fig 7)

**Fig. 7**

Push-block for use at overhand planer.
4.4.4 Guard for feed roller

The feed roller at the place where wood is inserted must be safely guarded to prevent the hand from being dragged into the machine (See Fig.8).

Fig. 8
4.5  **Vertical Spindle Moulding Machine**

Work done on vertical spindle moulding machine varies so much that no single guard can be relied on to give the operator security on every job. Most accidents could be avoided if the following safety precautions are complied with:

4.5.1  **Guard for cutter**

A secure guard should, if possible, be added to the cutter, having regard to the nature of the work being performed, so as to divert the hands from contact with the cutter. In this connection, the cage-type guard is recommended. (See Fig. 9)

![Cage type guard for spindle moulder.](image)

Fig. 9
Under special circumstances, where the type of work is such that a guard cannot be used, the wood must be firmly gripped with special devices to separate the hand from the cutter. (See Fig. 10)

![Work holder for use at spindle moulding machine.](image)

**Fig. 10**

### 4.5.2 Push-stick

A push-stick is a necessary safety device on a vertical spindle moulding machine. It will maintain a safety position between the hands and the blade in cutting short lengths of wood. (See Fig. 11)

![Push stick for use at spindle moulding machine.](image)

**Fig. 11**
4.6 Chain Mortising Machine

4.6.1 In spite of the fact that the work done by chain mortising machines is comparatively simple, the risk involved in it must never be ignored. The chain of any mortising machine should be provided with a safety guard. Except for the area which has to be exposed for performing the work, all other parts of the machine must be securely fenced. The wood itself must be secured with bolts or clamps in order to prevent it from flying out. (See Fig. 12)
4.7 General Safety Precautions

Apart from the aforesaid specific requirements on woodworking machines, the following general safety precautions should be observed in order to ensure the safety and health at work in connection with the use of woodworking machines:

(1) Woodworking machines must only be operated by persons who are competent for the purpose;
(2) Woodworking machines must be maintained in good condition, including regular cleaning, examination, repairs, etc;
(3) The workshop must be kept clean, passageway must be free from obstruction and a suitable place must be provided for storing wood and the finished products;
(4) Operators when operating woodworking machines must concentrate on the work;
(5) If operators of woodworking machines discover any defects on the woodworking machines, they must not operate the woodworking machine and the defect must be reported to the proprietor.
5. Useful Information

If you wish to enquire about this guide or require advice on occupational safety and health, you can contact the Occupational Safety and Health Branch of the Labour Department through:

Telephone Number : 2559 2297 (auto-recording after office hours)
Fax : 2915 1410
E-mail : enquiry@labour.gov.hk

Information on the services offered by the Labour Department and on major labour legislation can also be found by visiting our Homepage on the Internet. Our Homepage address is http://www.labour.gov.hk.

Information on the services offered by the Occupational Safety and Health Council can be obtained through hotline 2739 9000.

Complaints

If you have any complaints about unsafe workplaces and practices, please call the Labour Department's occupational safety and health complaint hotline at 2542 2172.